tration of young domestic animals, more especially lambs, this inventor has devised an instrument with curved spring jaws connected with shear-like blades, the jaws meeting only after the blades have made their complete cut.

DESIGN FOR A BELT POCKET.—Richard S. Porro, New York City. This design has a shield-like portion near the top of which is a spring tongue, while below it is a circular figure on the front of the shield.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention and date of this paper.

The New York Observer, the first religious newspaper established in New York City, and for nearly three-quarters of a century a recognized exponent of the best thought of the Presbyterian Church, comes to us this week in new form, and, instead of being a huge blanket sheet, its pages are of the small quarto form now becoming more popular, and so much more convenient for reading and reference. The paper was established by Sidney E. and Richard C. Morse, in 1823, and in 1840 Rev. S. Irenæus Prime became its editor, with whom was afterward associated his brother Rev. E. D. G. Prime. The present editors are a son and son-in-law of S. Irenæus Prime—Wendell Prime and Charles A. Stoddard. The Observer has always had in its service writers whose attainments were of the highest order in all religious and theological fields, and one of the members of its business department, Mr. T. H. Cuthell, has been with the paper more than half a century. The change of form will cause no change in the purpose and spirit of the paper.

SCIENTIFIC AMERICAN BUILDING EDITION.

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The Scientific American Architects and Builders Edition is issued monthly. $2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

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Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

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Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(6271) A. E. E., Brunswick, Ga., writes: Inclosed find a sample of a substance which fell from the sky, and which I am told is called "balloon spider's web." It fell in great abundance at four o'clock in the afternoon of September 20, 1892, at Gainsville, Fla., coming form a westerly direction after a series of light showers. I have shown the substance to a number of people in two or three of the Southern States, and while it excited considerable curiosity, no one was able to give me any information concerning it. I am told that the same thing has occurred in Russia and other parts of Europe. Will you kindly enlighten me on this subject or give me the technical name of the same, that I may inform myself? A. The substance received was a white silky fibrous material, very soft to the touch. Dr. L. O. Howard, Entomologist, Department of Agriculture, to whom were ferred the matter, says: The substance is, in all probability, spider silk. The falling of this silk in such abundance in the vicinity of Gainsville, Fla., in the third week of September, 1892, attracted considerable attention at the time, and samples were received at the department from several residents of Gainsville and Arredondo. The matter was carefully investigated by Dr. George Marx, the well known authority on spiders, who in a communication read before the Entomological Society of Washington November 3, 1892, published in Volume II. of the Proceedings, pp. 385-8, gave it as his conclusion that the substance was composed of the matted together webs or threads of gossamer spiders, which sail through the air in such numbers in the sunny days of early autumn. Careful chemical and microscopical examinations confirmed this theory.

(6272) W. C. V., Iowa, writes: Is there an observatory in United States whose latitude and longitude is so accurately known, and whose clock has the time sufficiently correct, and whose telescope is mounted with such accuracy in all its circles and bearings, that the telescope can be set at an altitude and azimuth according to astronomical computations, so that the planet Jupiter will appear in the field at the tick of the clock? Are the computations 200 years old or more, that are sufficiently correct to enable the performing of the above feat? A. Yes; every well regulated working observatory in the United States and other countries can set its transit for a computed entrance of a star or planet into the field. Many of the best equipped observatories can also set their equatorially mounted telescopes to cover the position of celestial objects within their field. Accurate observations have been made on the positions of celestial objects for the past 150 years, which with the present observation have well established the position and perturbation of all the members of the solar system and the position and changes for many thousands of the starry host.

(6273) E. A. T. asks: 1. What is the voltage of motor 641 wound for dynamo with No. 20 wire? A. We have no record of the factors, and do not recommend the motor as a dynamo. 2. Will small plating dynamo described in SUPPLEMENT, No. 720, give trouble by heating? A. No. 3. Are toothed washer armatures better than plain washers? A. Each has its own good points; one cannot be pronounced better than the other.

(6274) E. H. writes: 1. I have a small Wimshurst influence electric machine and am much troubled with the plates breaking. They start in the middle and the crack extends until the plate comes in half. They are cemented on to wheels in the center of the plate. Can I stop it in any way, and if not is there any other cheap substance that I could use instead of glass. Would hard rubber do? The plates are ten inches across. A. Possibly the crack is started in your plates by the heat used in cementing. They should not act as you describe. Ebonite will answer instead of glass. 2. Could you tell me of any paint that would do to cover the glass in making Leyden jars instead of tin foil? A. No. Metallic bronze powder might answer, but would be very inferior if put on with varnish. 3. Could you light a small incandescent lamp, say 1, 2, or 3 candle power, with my electric machine? A. No.

(6275) A. M. F. writes: 1. If two insulated points (copper or other metal) are 1/2 inch apart, will a current actuated by a potential of 10,000 volts jump across. A. No. 2. If two points, insulated, are inclosed in a vacuum, and connection is made by quicksilver flowing over the two points, what action will a 10,000 volt current have on the quicksilver? Or, in other words, can quicksilver, under these conditions, be used to complete circuit? A. There is no such thing as a 10,000 volt or any other volt current. Voltage is a measure of potential, not of current. Quicksilver will conduct a current very well, although it is of rather high resistance.

(6276) N. M. B. asks: 1. In making armature for motor described in "Experimental Science," can I with advantage use a section of an iron pipe 2 1/4 inches internal diameter, 2 inches long, and iron 3/8 inch thick, instead of wire armature? A. No; it is inferior to wire. 2. Is there any convenient and reliable test for genuine amber? A. Hardly any can be given; its specific gravity 1·065 to 1·081, hardness 2 to 2½, and its resistance to heat, fusing imperfectly at 550° Fah., are criteria. 3. Does the SCIENTIFIC AMERICAN SUPPLEMENT treat subjects more in detail than the SCIENTIFIC AMERICAN? A. The articles in the SUPPLEMENT are longer as a rule, and hence perhaps go more into detail. The SCIENTIFIC AMERICAN SUPPLEMENT represents the scientific life of the world in all departments better than any other publication known to us, and is an invaluable companion to the SCIENTIFIC AMERICAN.

(6277) J. N. T. asks: 1. Will No. 19 American gauge iron wire do for core of armature? A. Yes. 2. You state in body of article that No. 18 American gauge magnet wire is to be used on armature and in summary No. 16. Which is correct? A. Use No. 18 wire for the armature coils. 3. In your diagram you show that coils on field magnet are wound in shape of a pyramid. Must it be wound with one convolution less in each layer or must it be wound same as directions for armature? A. Our diagram shows the preferable way of winding the magnets. The pyramidal wiuding is not essential—it is convenient. 4. Can you tell me how to make a plunge battery to run the motor? A. See our SUPPLEMENT, No. 792. 5. Will a gravity battery run it? A. Not unless of very large size. We do not recommend it. 6. I have inspected a number of stove pipes made of galvanized iron, and in a number of cases I have noticed a deposit has run down the outside that has a brownish yellow cast. Can you please inform me what it is? Is it creosote from the smoke? A. We think it is largely empyreumatical matter (creosote, etc.)

(6278) G. P. McD. asks: Is there any hard non-conducting material that will stand the heat of an electric arc without burning for about 2 minutes? A. Lime, zirconia or magnesia approaches your requirements.

(6279) W. B. H.—False Scorpion on a House Fly.—The small brown A thropod, with flattened abdomen, and lengthened maxillary palpi, ending like a lobster's or scorpion's claws, and which fell from a house fly which Mr. W. B. Halsey, of Brooklyn, caught, is one of the false scorpions (Chelifer cancroides, L.) This species is often found on the legs of flies and of other insects, allowing itself thus to be transported and perhaps feeding upon the red mite, Astoma (Trombidium) muscarum, Riley, which is so frequently attached to the common house fly. The Chelifer is not uncommon about old books and in dark places, where it feeds on mites and book lice (Psocus spp.) The female carries her eggs in a little bunch under the abdomen.—C. V. R.

(6280) F. J. M. says: In what part of bivalves are pearls found? I mean whether they are situated inside of the body of the pearl oyster, or outside between the body and the shell. A. It is believed that most pearls are formed by the intrusion of some foreign substance between the mantle of the mollusk and its shell, which, becoming a source of irritation, determines the deposition of nacreous matter in concentric layers until the substance is completely encysted.—Encyclopedia Britannica.

(6281) W. D. S. asks: Is there any trouble experienced with fire hydrants from freezing? And if so, what is the cause? Is it from difficulty in getting rid of the water in the hydrant after it is shut off from below? A. When fire hydrants are properly set with a cesspool and waste for draining the hydrant when closed, there should be no trouble from freezing. If the waste hole is not provided, or gets stopped, the hydrant will remain full of water and will freeze solid in cold weather. In cold climates the valve of a hydrant should be 5 feet below the surface, with a pit sufficiently large to quickly absorb the water wasted, and from leakage of the valve.

Communications Received.

"On the Sun." By T. B. Joseph.

"Theory of the Cause of Solar and Planetary Rotations." By I. E. C.

"The Eucalyptus." By J. F. J.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

October 16, 1894,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]